

# Distorted food pyramid in kids programmes: A content analysis of television advertising watched in Switzerland

Simone K. Keller, Peter J. Schulz

Institute of Communication and Health, Università della Svizzera italiana, Lugano, Switzerland

**Correspondence:** Simone K. Keller, Institute of Communication and Health, Faculty of Communication, Università della Svizzera italiana, Via Giuseppe Buffi 13, 6904 Lugano, tel: +41-58-6664488, fax: +41-58-6664647, e-mail: simone.keller@lu.unisi.ch

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**Background:** In the light of increasing childhood obesity, the role of food advertisements relayed on television (TV) is of high interest. There is evidence of food commercials having an impact on children's food preferences, choices, consumption and obesity. We describe the product categories advertised during kids programmes, the type of food promoted and the characteristics of food commercials targeting children. **Methods:** A content analysis of the commercials aired during the kids programmes of six Swiss, one German and one Italian stations was conducted. The commercials were collected over a 6-month period in 2006. **Results:** Overall, 1365 h of kids programme were recorded and 11 613 advertisements were found: 3061 commercials (26.4%) for food, 2696 (23.3%) promoting toys, followed by those of media, cleaning products and cosmetics. Regarding the broadcast food advertisements, 55% were for fast food restaurants or candies. **Conclusion:** The results of the content analysis suggest that food advertising contributes to the obesity problem: every fourth advertisement is for food, half of them for products high in sugar and fat and hardly any for fruit or vegetables. Long-term exposure to this distortion of the pyramid of recommended food should be considered in the discussion of legal restrictions for food advertising targeting children.

**Keywords:** advertising, children, content analysis, food, television

## Introduction

The World Health Organization (WHO) announced, as early as 1998, that 'obesity should be regarded as today's principal neglected public health problem'.<sup>1</sup> In Europe, the prevalence of childhood obesity is today 10-times than that in the 1970s.<sup>2</sup> Recent data from the International Obesity Taskforce show that in Europe 11 million children between 5 and 17 years of age are overweight and 3 million are obese. There is a notable difference between the southern, Mediterranean countries, where the prevalence of overweight at 20–35% is the highest, and the northern countries with a prevalence of 10–20%.<sup>3</sup> In Switzerland, data from 2004 indicate that 18% of the Swiss girls between 6 and 12 years of age and 20% of the boys are overweight.<sup>4</sup>

The causes of this 'epidemic' are less clear. According to Livingstone,<sup>5</sup> individual, social, environmental and cultural factors influence children's diet, and these multiple factors interact in complex ways not yet well understood. TV watching and food advertising have to be counted among these factors. A causal association between TV and body weight was first reported in 1985 by Dietz and Gortmaker<sup>6</sup> who found an increase of 2% in the prevalence of overweight among American children for every additional hour per day spent viewing TV. With regard to food advertising on TV, children gained without any doubt increased importance as a target group.<sup>7</sup> They dispose of a growing amount of money they can spend on their own, and their role as 'future consumers' is already considered.<sup>8</sup> In 2004, the US food, beverage and restaurant industry spent US\$5 billion on TV advertising, including about US\$1 billion to target children directly.<sup>9</sup>

Several reports have reviewed the impact of advertising on children's food preferences, choices, consumption and obesity/health.<sup>5,9–11</sup> As Livingstone underlines in the most recent review, it 'remains unclear whether the association between overall TV exposure and obesity reflects the specific influence of exposure to TV advertising or whether it is due to increased snacking while viewing or to a sedentary lifestyle with reduced exercise'.<sup>5</sup> Nevertheless she concludes that there is a growing consensus among experts that food advertisements influence children's food preferences, diet and health.

A recent study found that advertisements for nutritious foods promote selected positive attitudes and beliefs concerning these foods.<sup>12</sup> There is also evidence that exposure to food advertisements increases food intake in children, and that obese and overweight children are more alert to food-related cues.<sup>13,14</sup>

Several studies have analysed the composition and content of advertising broadcast during children's TV programmes. They found an elevated amount of food advertisements, with foods high in fat and sugar and low in fibre being the most promoted categories.<sup>15–19</sup> In Switzerland, no similar study has been conducted so far. The aim of the present research is to investigate the composition of product categories advertised during kids programmes in Switzerland, the types of promoted food and the strategies used in food commercials targeted to children.

## Methods

A content analysis of commercials of the six major TV networks in Switzerland as well as one German and one Italian network over the period from March to August 2006

was conducted. The sample includes 11 613 commercials. The networks and programmes were chosen by means of two criteria: most popular kids programmes had to be included in the sample and the time slots when TV use among children is high had to be covered. The kids programmes Swiss children watch most were identified with the search engine of publisuisse (<http://www.publisuisse.ch/de/research/mediennutzung/tv/top-sendungen.cfm>). The 10 top broadcasts were detected for the third week of January 2006; criteria for the ranking were 'Kids and Youths' as programme type, and 'Children 3–16 years' as target category. The analysis was run separately for every language region. Among the 10 most watched kids programmes during this week, there were also shows aired on two foreign channels, SuperRTL (In Switzerland, SuperRTL broadcasts a Swiss advertising window) in the German and Italia1 in the Italian language region. Those channels were added to the sample. The identified top programmes were not distributed over all day times. Hence, to cover all the time slots when TV use among children was identified to be high,<sup>20</sup> the kids programmes aired during these slots were included for every channel, even if they were not among the most popular broadcasts.

The final sample included only kids and no adults programmes. Obviously, this does not correspond to the total amount of children's exposure to TV, as they also watch adults' programmes. The study, however, aimed at analysing what kind of advertisement children are exposed to when watching the programmes claimed to be suitable for them.

Eight HDD–DVD recorders registered the selected programmes every second week on hard-disk; in the alternate week, three coders, trained students of Communication Science at the University of Lugano, coded the recorded programme and the commercials broadcast within the programmes. This method permitted us to maintain a reasonable, yet workable sample; furthermore, to maximize our sample of different food commercials, we preferred a larger variety of different commercials over a high number of repeats of commercials. The 6-month time period allowed us to ascertain that properties of advertisements during the kids programmes were more than just phenomena that happened to occur in an arbitrarily selected week. In fact, the proportion and composition of food advertisement during kids programmes remained unvaried during the 6 months.

A total of 1365 h containing 11 613 broadcast commercials were recorded and analysed with a standardized codebook. The codebook was developed specifically for this study and consisted of four parts: the first three parts concerned all recorded commercials, while the last part focused on a deeper analysis of food advertisements. All 11 613 spots were analysed according to their technical attributes, the formal characteristics of the advertisement block and for the product. The product categories were based on the official classification used by the marketing research company Mediafocus ([www.mediafocus.ch/de/methodik/marktsystematik](http://www.mediafocus.ch/de/methodik/marktsystematik)). Additionally, every new food advertisement was further coded with the fourth part of the codebook. Examples of variables in this part are the specific type of food (classification was again made according to the aforementioned classification), as well as the presentational styles, the technique, the actors or the presence of jingles. In a final step, the promised gratifications in the commercials were examined.

To allow comparison between advertisements targeted to children and those targeted to adults, a general target was assigned to every ad. In case of overlapping or doubt, the commercial was coded as undefined target. Assignment criteria for an advertisement targeted to children was a global judgement of the main thrust of the advertisement,

including the presence of children, cartoon figures or famous people as protagonists, fast pace, colours, easy language and the nature of the persuasive appeal.<sup>17,21</sup> Not included in the coding judgement was the target of the product, as some foods targeted to kids (e.g. chocolate bars for school breaks) were advertised in commercials targeted to adults (e.g. to the mother).

The three coders were trained to analyse the commercials. Initially, each coder viewed a first sample of advertisements independently, and the responses of each coder to each item were compared. Coding discrepancies were resolved through discussion before analysis continued. Since each item produced either unanimous or near-unanimous agreement among the coders, the codebook was judged reliable.

## Results

Between March and August 2006, 1365 h of kids TV programme were recorded and 11 613 commercials were found and analysed. Of them, 3061 were for food (26%) consisting of 335 different commercials, 2696 promoted toys (23%), followed by those of media, cleaning products, cosmetics and other goods. There is, however, a big difference between the six public channels in Switzerland and the two private channels from Germany and Italy. Analysing only the Swiss channels, the percentage of food advertisements showed during the kids programmes was 37%. On the German channel SuperRTL, the amount was lower with 32%, whereas the Italian channel Italia1 had only a 15% rate of food advertisement, due to the many advertisements for toys (see table 1).

In a next step, we examined what food advertisements a child is exposed to when watching the kids programmes broadcast on the selected channels. The results are represented in a food pyramid: the left half of the pyramid represents all the broadcast food advertisements ( $n = 3061$ ), the right half is based only on food advertisements targeting children ( $n = 1344$ ) (see figure 1).

The left side of the pyramid shows what Swiss children really see advertised during the kids programmes: fast food restaurants (24%) or candies (31%), followed by cereals (13%) and sweet beverages (14%), hardly any vegetables or fruits (3%). Considering just the food advertisements targeted to children on the right side of the pyramid, the share of the rather unhealthy food categories like fast food restaurants (47%), candies (24%) or sugared cereals (23%) was even higher. Regarding advertising strategies, 35% of those advertisements used a jingle, 39% contained cartoons or elements of cartoons, 42% showed children consuming the product and 29% presented a fantasy world situation. Among the most common appeals promised in the food commercials targeting children we found fun (46%), sport/action (21%), adventure (15%) and taste (8%). Of them 54% offered premiums like toys, stickers or small games included in the package.

In table 2, results are calculated for an average hour of TV watching. A child watching exclusively the kids programmes on Swiss channels sees five advertisements on average; an hour watching kids programmes on Italia1 means 24.6 advertisements and an hour of watching SuperRTL amounts to 8.7 advertisements. On the Swiss channels, 1.5 of the spots are for foods high in sugar/salt and fat like, for example, fast food, candies, sweet beverages, sugared cereals and salty snacks; on Italia1 there are 2.6 such advertisements and on SuperRTL 2.7/h. Furthermore, in table 2 the average number of advertisements seen by children in Switzerland during 1 year is calculated. The results are valid for kids with a daily amount of TV consumption corresponding to the Swiss average of 110 min, and watching exclusively programmes labelled as

'kids programmes'. The number was computed by multiplication of the average number of advertisements per hour with the average daily amount of TV viewing in hours, times 365.

## Discussion

### Advertising during kids TV programmes

Food commercials dominate TV advertisement during kids programmes (table 1). On the Swiss channels, over one-third of advertisements broadcast were for food. This fits with the results of a study conducted in 1996 among 13 OECD countries.<sup>22</sup> In more than half of the countries, 40% of the commercials were for food. The amount of food advertisements ranged from 84% (Netherlands) to 12% (Sweden).

Regarding the different food categories, figure 1 shows a food pyramid with completely inverted layers, with respect to the recommended food pyramid.<sup>23</sup> In fact, looking at the total amount of food advertisements in the left part of the pyramid, candies and fast food restaurants (55%) are at the basis, vegetables and fruits (3%) at the top. This misrepresentation of the food pyramid could also be found in numerous similar studies, which have scrutinized the composition of food categories during kids programmes in the UK, USA or Australia.<sup>24–28</sup> On average, candies, breakfast cereals and

restaurants (virtually all for fast food restaurants) accounted for more than half of all food advertisements.

With regard to frequency of occurrence, in the present study commercials for food are followed by toys (23.2%) mainly showed on Italia1, and media/entertainment (9.7%). As table 1 shows, besides such commercials for products targeted to children, also products targeted to adults are promoted, such as computers, cosmetics or cleaning agents.

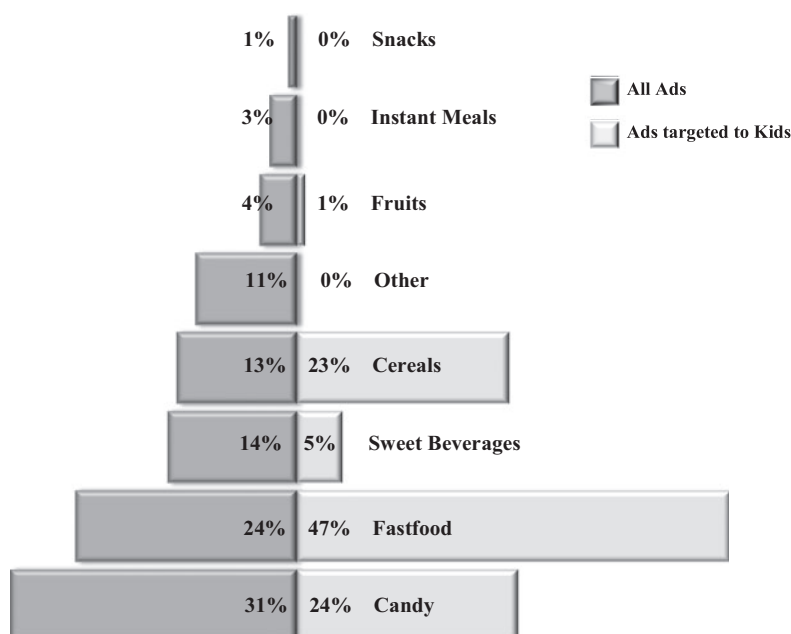
### Food commercials targeting children

As this gives evidence that advertisers expect not only kids but also their parents to watch the kids programmes, we can assume that also food advertisement is targeting both kids and adults. For a further analysis it therefore makes sense to subdivide the sample according to target groups (kids vs. adults) and look just at the food advertisements designed for children.

Under the assumption that the attention of children is caught particularly—if not exclusively—by commercials targeted to kids, a more pertinent pyramid was created, showing only the foods that were promoted in spots targeted to children (right side of the pyramid in figure 1). Out of all 3061 broadcast food commercials, 1344 were judged to target exclusively children. The advertised food pyramid changes radically: fast food restaurants, candies and cereals

**Table 1** Distribution of product categories broadcast during the selected kids programmes collected over 6 months

Product category	Swiss channels n (%)	Italia1 n (%)	SuperRTL n (%)	Total n (%)
Food	1762 (36.6)	779 (15.1)	520 (31.8)	3061 (26.4)
High in sugar/salt and fat (percentage of food advertisements)	1459 (82.8)	546 (70.1)	509 (97.9)	2514 (82.1)
Toys	763 (15.9)	1782 (34.5)	151 (9.2)	2696 (23.2)
Media	500 (10.4)	486 (9.4)	137 (8.4)	1123 (9.7)
Computer/office	111 (2.3)	688 (13.3)	152 (9.3)	951 (8.2)
Cosmetics	296 (6.2)	166 (3.2)	366 (22.4)	828 (7.1)
Clothing	133 (2.8)	459 (8.9)	41 (2.5)	633 (5.5)
Cleaning agents	402 (8.4)	55 (1.1)	75 (4.6)	532 (4.6)
Other	843 (17.6)	752 (14.6)	194 (11.9)	1789 (15.4)
Total	4810 (100)	5167 (100)	1636 (100)	11 613 (100)



**Figure 1** Percentage distribution of food categories of the broadcast advertisement

compromised >90% of all the 1344 broadcast commercials exclusively targeting children. None of them was for fruit or vegetables. These results are comparable with a recent US study,<sup>17</sup> where 34% of food advertisements targeting children and teens were for candies, 28% for cereals and 10% for fast food, whereas 1% was for fruit juice and none was for fruits or vegetables.

### Advertisements seen in 1 year

According to cultivation theory,<sup>29</sup> heavy TV viewing and long-term exposure can cultivate people's perception of the world. Therefore, if children (and their parents) are continually exposed to food advertisements as those aired on Swiss TV, they could change their ideas of what is a normal diet. If we assume a link between food advertisement and children's behaviour and consider the implications of cultivation theory, then the results of the present study are cause for concern, as the order of the layers in the presented nutrition pyramid is the opposite of the advised food pyramid. To relate the frequency of advertisements aired with the average TV consumption of Swiss kids, the amount of advertisements viewed per year of regular TV watching is estimated. In an international comparison, Swiss children are not heavy TV viewers; on average they watch 1.5 h of TV a day.<sup>20</sup> Only 24% of Swiss kids (10–16 years) watch >3 h daily. In Germany, 38.5% and in Italy 42.7% of the children spend >3 h daily in front of the TV.<sup>30</sup>

If a Swiss child with an average TV consumption of 110 min a day watches exclusively kid's programmes, it is exposed to 1232 advertisements for foods every year (table 2). The average length of food advertisements in our sample was 21 s. Consequently, a Swiss child spends 7.11 h every year watching food commercials, if the average 110 min a day are spent on programmes labelled as kid's programmes.

Due to the high amount of advertisement and the high amount of TV consumption in the USA, the average number of food advertisements seen every day on kids programmes in the the USA is 17, which amounts to 6045 every year corresponding to 40 h of watching food advertisements year-by-year.<sup>17</sup>

### Legal restrictions

In the light of cultivation theory and considering the evidence of successful food advertising targeting children, the results put the spotlight on legal restrictions for food advertisements during kids programmes. Such restrictions could concern the amount of advertisement, the products shown or the marketing strategies used in advertisements targeting kids.

Some food industry advertisers and opponents of restrictions for food advertisements argue that there is no causal link between advertising and obesity because advertising, in the long term, has no persuasive effect.<sup>31</sup> But as Ehrenberg stresses out in his 'weak' theory of advertising, advertising does not work only through persuasion. Its main role is to reinforce and maintain existing behaviour patterns.<sup>32</sup> Hence, supporting the continuation of unhealthy behaviour patterns,

advertising reduces the likelihood that individuals will recognize the behaviours as unhealthy or seek to change these.<sup>33</sup>

Of course restrictions alone would not eliminate the obesity problem but support other interventions: Hoek and Gendall claim the need of paying more attention to a regulatory environment, which will enable the success of social marketing and education programmes in the field of obesity prevention.<sup>33</sup> From a psychological point of view, restrictions are supported by the evidence that children below the age of 7–8 years are a special audience with narrowed information-processing capabilities. Therefore, advertising targeting kids can be considered inherently unfair and should be regulated.<sup>34</sup>

It is difficult to ascertain the effectiveness of regulation in countries, which have introduced such measures, as it is hard to determine unequivocally possible effects of restrictions in a reality with unstable obesity rates and with cross-border TV broadcasts. While testing the effects on a practical level will remain a difficult task, a recent literature review by Veerman *et al.*<sup>35</sup> tried it on a theoretical level. With a mathematical simulation model, they estimated that a complete ban on food advertising on TV may reduce the prevalence of obesity among US children by ~2.5%.

These findings can legitimize the numerous efforts made in recent years regarding restrictions for food advertisements in TV. In Switzerland, the discussion has not yet led to decisions on a regulation level. In the near future, further research could repeat the study in order to ascertain whether the amount of advertisements for foods high in sugar and fat remains stable over time.

### Conclusions

In view of the rising epidemic of childhood obesity, TV kids programmes presenting an inverted food pyramid during the advertising break give reason to discuss the role and effects of food advertising on TV. Of course, given the multiple channels like in-school marketing, product placements in movies or the internet, TV is just one of many sources of food advertisement that can influence the children's purchase behaviour. But TV viewing has been firmly linked to childhood obesity. It is not yet clear how much of this accepted effect is due to advertising exposure and how much is due to reduced energy expenditure during TV watching, but some evidence suggests that the latter does not play a significant role.<sup>36,37</sup>

Considering the development of childhood obesity and the gravity of the health effects connected with it, regulation of food advertisement targeting children during TV kids programmes has to be considered. The precautionary principle recommends that in presence of a threat of serious damage to human health, a lack of full scientific knowledge about the situation should not be allowed to delay containment or remedial steps. Hence, until scientific evidence about the direct effect of food advertisements on childhood obesity is available, the ban of commercials for foods high in sugar/salt and fat could be seen as a precautionary measure.

**Table 2** Average number of advertisements in TV-kids programme in Switzerland compared with Italy and Germany

	Swiss channels <i>n</i>	Italia1 <i>n</i>	SuperRTL <i>n</i>	TOTAL <i>n</i>
Advertisements per hour (per year <sup>a</sup> )	5 (3376)	24.6 (16 611)	8.7 (5875)	8.5 (5740)
Food advertisements per hour (per year <sup>a</sup> )	1.8 (1232)	3.7 (2505)	2.8 (1858)	2.2 (1514)
High in sugar/salt and fat per hour (per year <sup>a</sup> )	1.5 (1013)	2.6 (1756)	2.7 (1823)	1.8 (1215)

a: Exposure of Swiss children with an average daily TV consumption of 111 min, watching exclusively shows labelled as 'kids programmes'. The number was computed by multiplication of the average number of advertisements per hour with the average daily amount of TV viewing in hours, times 365.



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## Key points

- There is evidence that food commercials influence children's food preferences, choices and consumption, suggesting a link to childhood obesity.
- This study presents results from a content analysis of the TV kids programmes broadcast by six Swiss, one German and one Italian stations, collected over 6 months.
- Out of 11 613 recorded commercials, 26.4% were for food, of which more than half promoted fast food restaurants or candies, but virtually none promoted fruits or vegetables. This represents a distortion of the recommended food pyramid.
- Long-term exposure to such advertising damages children's diets. For this reason, legal restrictions for food advertising targeting children should be considered.

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